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10CS45

# Fourth Semester B.E. Degree Examination, June/July 2013
## Microprocessors

Time: 3 hrs. Max. Marks:100

**Note:** ***Answer FIVE full questions, selecting at least TWO questions from each part.***



### PART – A

1 a. Draw the physical memory system diagram for intel Pentium microprocessors. **(06 Marks)**

b. Discuss the functions of segment registers of 8086 with examples. Give some advantages of memory segmentation. **(08 Marks)**

c. What is pipelining? How is it achieved in 8086? **(06 Marks)**

2 a. Explain how virtual address is translated into physical address with a neat diagram. **(08 Marks)**

b. Identify the addressing modes of the following instructions and explain them briefly:
i) MOV WORD PTR [SI], 20H
ii) MOV ES : [1000H], 10H
iii) MOV CX, NUM[BX + DI] **(06 Marks)**

c. Briefly explain the flat mode memory model with a neat diagram. **(06 Marks)**

3 a. Write an ALP using 8086 instructions to search a number placed in location NUM, in an array of ten numbers placed at location ARRAY. Give suitable messages. **(08 Marks)**

b. Describe the following instructions with an example:
i) LEA ii) XCHG iii) DAA iv) MUL **(08 Marks)**

c. Give the state of all the status flag bits after the addition of 30A2H with F01CH. **(04 Marks)**

4 a. Explain the following assembler directives with examples:
i) DB ii) EXTRN iii) PROC iv) SEGMENT. **(08 Marks)**

b. Differentiate between procedures and macros. **(04 Marks)**

c. Write an ALP using 8086 instructions to reverse a four digit number. **(08 Marks)**

### PART – B

5 a. What is inline assembly? Explain its need. **(06 Marks)**

b. State the C language elements that can be used in the arm block. **(06 Marks)**

c. Explain the basic rules for using assembly language with C/C++ for 16-bit DOS applications with the help of examples. **(08 Marks)**

6 a. Explain the functions of the following pins of 8086 microprocessor:
i) ALE ii) INTR iii) HOLD iv) RESET v) BHE **(05 Marks)**

b. Explain how address demultiplexing is done in 8086 processor based systems. **(07 Marks)**

c. With a neat timing diagram, explain memory read cycle. **(08 Marks)**

7 a. List various memory devices. **(02 Marks)**

b. What is memory address decoding? Design a memory system for 8086 for the following specifications:
i) 32 Kbytes EPROM using 16 Kbyte devices.
ii) 64 Kbytes SRAM using 16 Kbyte devices.
Draw the memory map. **(10 Marks)**

c. What are the sources of interrupts? Briefly explain the steps taken by a processor to execute an interrupt instruction. **(08 Marks)**

8 a. Briefly explain the control word format of 8255 in I/O mode and BSR mode. Give the control word format to program Port A and Port C lower as input and Port B and Port C upper as output parts in mode O. **(10 Marks)**

b. Write an ALP using 8086 instructions to read a byte of data from Port A and display its parity status as OOH or FFH for odd and even parity respectively, on Port B. **(05 Marks)**

c. List the features of 8254 PIT (Programmable Interval Timer). **(05 Marks)**

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